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NOTES ON WESTERN ERYSIPHEÆ AND PERONOSPOREÆ.

BY S. M. TRACY AND B. T. GALLOWAY

During the past two years the writers have collected *Erysipheæ* and *Peronosporeæ* in Missouri, Wisconsin, Colorado, New Mexico, Utah, Arizona and southern California. It has been a matter of no little surprise to them to find how wide is the distribution of most species of *Erysipheæ*, there being very few mentioned if any of the catalogues published in the western states which have not been found in widely separated localites. The distribution of most species has been found to be much wider than is that of any one of its hosts. Where a species is commonly limited to plants of a single order in any locality, it has not in any case been found on plants outside that order, although in some cases when new genera were noted in the flora, the fungus was no longer found upon the hosts where first observed. As an instance of this, *Podosphæra oxycanthæ* is frequently found on several species of *Cratægus* and *Prunus* in the Mississippi valley, while in the Rocky Mountain region, where both *Cratægus* and *Prunus* are found abundantly, the *Podosphæra* is found on *Prunus demissa*, a near relative of *P. Virginiana* and has not been noted upon *Cratægus* or *P. Virginiana*, which are both abundant. In the west, *Erysiphe cichoraceareum*, DC., takes *Stachys palustris* as its host in the place of *Teucrium* in the east; *Mertensia*, the place of *Hydrophyllum*; and many other similar instances will be noted in the accompanying list. The number of *Peronosporeae* found in the arid regions was very small, and the few which were taken were, without exception, found high on the mountains or in deep mountain canons, where the melting snows furnished constant and abundant moisture. The accompanying list does not claim to approach completeness except for Missouri, the notes from other states being added simply as a matter of record.

ERYSIPHEÆ.

SPHÆROTHECA CASTAGNEI, Lev.—On *Taraxacum officinale*, *Bidens frondosa*, *Vernonia noveboracensis* (Missouri); *Viola cucullata*, *Viola canina*, var. *sylvestris* (Golden, Colorado).

SPHÆROTHECA HUMULI (DC.) Burrill.—On *Agrimonia eupatoria* (Missouri); *Geum macrophyllum* (Wisconsin).

SPHÆROTHECA MORS UVAE (Schw.) B. & C.—On *Ribes rotundifolium* (Missouri). The perithecia were found only on the fruit.

SPHÆROTHECA PANNOSA (Wallr.) Lev.—On *Rosa lucida* and cultivated Roses (Missouri). In our specimens, the appendages are colored near the base, as described by Tulasne (Fung. Carp. Select., I, page 208).

SPHAEROTHECA PRUINOSA, C. & P.—On *Rhus copallina* (Missouri). This species was collected in southern Missouri in 1886 and it agrees very well with the published description of the authors.

SPHÆROTHECA LANESTRIS, Hark.—This remarkable species was taken near Napa City, California, upon the young shoots of *Quercus agrifolia*. The tree from which the specimens were obtained was a large one, the trunk being fully two feet in diameter, and its peculiar appearance attracted attention a considerable distance. The dense mycelium completely covers the young leaves and twigs, causing the former to shrivel and cease growing before they attain one-fourth their usual size. The perithecia are frequently overlooked as they are buried in the dense mats of mycelium.

PODOSPHAERA OXYCANTHÆ, DC.—On *Amelanchier Canadensis*, *Prunus domestica*, *Prunus cerasus*, *Spiræa*, *Cratægus crus-galli* (Missouri); *Cratægus oxycantha* (Wisconsin); *Prunus demissa* (Colorado and Utah). The form on *Spiræa* agrees with the published specimen in Ellis North American Fungi distributed as *Microsphæra*.

ERYSIPHE CICHORACEARUM, DC.—On *Verbena urticæfolia*, *Verbena hastata*, *Plantago major*, *Ambrosia trifida*, *Ambrosia artemisæfolia*, *Vernonia noveboracensis*, *Helianthus annuus*, *Galium aparine* (Missouri); *Aster corymbosus*, *Hydrophyllum Virginicum*, *Inula helenium*, *Phlox paniculata* (Wisconsin); *Solidago Canadensis*, *Stachys palustris*, *Dysodia chrysanthemoides*, *Verbesina enceliodes*, *Iva xanthiifolia* (Colorado); *Rudbeckia occidentalis*, *Helianthella Parryi*, *Mimulus luteus*, *Humulus lupulus*, *Mertensia Siberica*, *Ambrosia psilostachya* (Utah). It is seen that several of the hosts named above upon which this widely distributed species occurs are new, and yet in all the specimens examined we find the characters as set forth by Burrill and Winter quite constant throughout.

ERYSIPHE COMMUNIS, (Wall.) Fr.—On *Pniaæ*, cult., *Dahlia*, cult., *Pea*, cult., *Phaseolus perennis*, *Phaseolus helvolus* (Missouri); *Astragalus Canadensis*, *Geranium maculatum*, *Clematis Virginiana*, *Aquilegia Canadensis* (Wisconsin); *Thermopsis Montana*, *Trifolium involucratum*, *Clematis ligustifolia* (Colorado); *Lathyrus polymorphus*, *Lupinus argenteus*, var. *argophyllus*, *Astragalus junceus*, *Astragalus Canadensis*, *Thermopsis* (Utah); *Ranunculus cymbalaria* (Nevada).

ERYSIPHE TORTILIS (Wallr.) Winter.—On *Cornus sanguinea* (Missouri).

ERYSIPHE GALEOPSIDIS, DC.—On *Scutellaria parvula* (Wisconsin).

ERYSIPHE GRAMINIS, DC. (?)—On *Elymus condensatus* (Palisade and Reno, Nevada). This fungus was found in abundance at the stations named and it is somewhat remarkable for its very large perithecia and the number of asci. The spores were not sufficiently developed to distinguish their number, so that for the present we have referred the species to *E. graminus*, of which it is probably only a form. Our specimens give the following characters:

Amphigenous, but most abundant upon the lower surface; mycelium persistent in irregular patches, sometimes covering the entire surface, reddish-brown; perithecia very large, 225—250 *u* in diameter; appendages dark brown, short, crooked, scarcely distinguishable from the mycelium with which they are interwoven; asci 27—34, usually about 30, elliptical, spores not seen.

UNCINULA AMPELOPSIDIS, Pk.—On cultivated *Vitis*, *Ampelopsis quinquefolia* (Missouri and Wisconsin).

UNCINULA CIRCINATA, C. & P.—On *Acer dasycarpum* (Missouri).

UNCINULA FLEXUOSA, Pk.— On *Æsculus glabra* (Missouri). Our specimens of this species were contributed by Rev. C. H. Demetrio, who collected them in Perry county. They agree very well with specimens collected by Mr. Peck in New York.

UNCINULA MACROSPORA, Pk.—On *Ulmus Americana* (Missouri).

UNCINULA PARVULA, C. & P.—On *Celtis occidentalis* (Missouri).

UNCINULA SALICIS (DC.) Winter.—On *Salix falcata*, *Salix nigra* (Missouri); *Populus angustatus*, *Populus tremuloides* (Wisconsin).

MICROSPHÆRA RUSSELLII, Clinton.—On *Oxalis stricta* (Missouri).

MICROSPHÆRA DIFFUSA, C. & P.—On *Desmondium Canadense* (Missouri).

MICROSPHÆRA EUPHORBIÆ, B. & C.—On *Euphorbia corollata* (Missouri).

MICROSPHÆRA ALNI (DC.) Winter.—On *Viburnum prunifolium*, *Platanus occidentalis* (Missouri); *Celastrus scandens*, *Lonicera glauca*, *Cornus stolonifera* (Wisconsin).

MICROSPHÆRA FRIESII, Lev.—On *Syringa vulgaris* (Missouri).

MICROSPHÆRA QUERCINA (Schw.) Burrill.—On *Quercus rubra*, *Quercus alba* (Missouri).

MICROSPHÆRA RAVENELLII, Berk.—On *Gleditschia triacanthos* (Missouri).

MICROSPHÆRA SYMPHORICARPI, Howe.—On *Symphoricarpus vulgaris* (Missouri).

PHYLLACTINIA SUFFULTA (Reb.) Sacc.—On *Betula nigra*, *Cornus*, sp. (Missouri); *Celastrus scandens*, *Corylus Americana* (Wisconsin).

PERONOSPOREÆ.

PERONOSPORA ARTHURI, Farlow.—On *Œnothera biennis* (Missouri).

PERONOSPORA AUSTRALIS, Spez.—On *Sicyos angulatus* (Missouri).

PERONOSPORA VITICOLA (B. & C.) DeBy.—On *Vitis*, various species and cultivated varieties (Missouri).

PERONOSPORA HALSTEDII, Farlow.—On *Vernonia noveboracensis* (Missouri). So far as we know, this species has been collected but once within the borders of Missouri.

PERONOSPORA OBDUCENS (Schroter).—On *Impatiens pallida* (Missouri).

PERONOSPORA GERANII, Pk.—On *Geranium Carolinianum* (Missouri).

PERONOSPORA ENTOSPORA, B. & Br.—On *Aster novae-angliae* (Missouri).

PERONOSPORA ALTA, Fckl.—On *Plantago major* (Missouri).

PERONOSPORA GANGLIFORMIS (Berk.) DeBy.—On *Mulgedium*, sp. *Lactuca Canadensis* (Missouri).

PERONOSPORA SORDIDA, Berk.— On *Schrophularia nodosa* (Missouri).

CYSTOPUS BLITI (Biv.) Lev.— On *Amarantus retroflexus*, *Amarantus albidus* (Missouri and Colorado).

CYSTOPUS CANDIDUS (P.) Lev.—On *Capsella bursa-pastoris* (Missouri).

CYSTOPUS PORTULACÆ (DC.) Lev.—On *Portulaca oleracea* (Missouri).

CYSTOPUS CUBICUS (Strauss) Lev.—On *Tragopogon porrifolius*, *Senecio aureus* (Missouri); *Ambrosia artemisiaefolia* (Colorado and New Mexico).

SOME MILDEWS OF ILLINOIS.

BY L. H. PAMMEL, ST. LOUIS, MO.

For the past two seasons I have had an opportunity of collecting at several points in Illinois, near Chicago at Palatine, Cheltenham, Argyle Park and Lake View; also in the bottoms opposite St. Louis, which is a rich field for the collector not only in phænogams but fungi.

In the species enumerated, I have adopted the synonomy of the excellent paper on "The Erysipheæ of Illinois" by Prof. T. J. Burrill and Mr. F. S. Earle. From this paper it seems that some species are somewhat local, so that it will be of interest to add new localities for those and also such additional hosts as they were found on. One species new to the state has also been added.

SPHÆROTHECA CASTAGNEI, Lev.—On *Bidens chrysanthemoides*, Bluff Lake, Oct., '86; *B. connatus*, Bluff Lake, Nov., '87; *B. frondosa*, Chicago, Sept., '85; *Coreopsis aurea*, Argyle Pk., Aug., '87; *Taraxacum officinale*, Lake View, Sept., '85; *Veronica Virginica*, Bluff Lake, Nov., '86.

SPHÆROTHECA HUMULI (DC.) Burrill.—On *Agrimonia Eupatoria*, Cheltenham, Sept., '85, Lake View, Aug., '87.